The Citrus Industry

As the New Year Cupid gaily rings in 1947, let us pause a moment and resolve to make this year one of fullness and happiness in our relations to each other. Let us help each other achieve love, happiness, peace and prosperity this year and every year to follow.

Vol. 28, No. 1 January, 1947

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Efficient Use Of DDT In Insect Control

A. N. TISSOT
Entomologist, Florida Experiment Station

Aside from the atomic bomb, nothing coming out of World War II has created such widespread interest and called forth so much comment and discussion as DDT. American scientists began experimenting with the new insecticide late in 1942, and it was not long until articles about it began to appear in popular magazines and newspapers. These early writers often played up the sensational features of DDT and credited it with fantastic powers.

When DDT insecticides became generally available about a year ago, people using them often were disappointed, for they found that DDT would not kill all insects instantly as they had expected, and some insects were affected little or not at all. Soon stories of another type began to appear. The writers of these pictured DDT as a very dangerous insecticide and hazardous to human beings and domestic animals. Of course, neither of these extreme views gives a true or accurate picture of DDT .Much of the reliable information about it has been published in scientific journals and magazines which are not generally read by laymen. All of this has brought about a great deal of uncertainty and confusion in the public mind. As a possible aid to the clarification of some of this confusion it may be advisable to give a brief discussion of DDT and its use as an insecticide.

Pure DDT is never used as an insecticide. It always is combined with one or more other ingredients which give to it certain characteristics and render it suitable for rather definite uses. These mixtures containing DDT are spoken of as formulations, and already dozens of them have appeared on the market under an almost equal number of trade names. All of these many formulations can be grouped in about five general classes or types, namely: dusts, water dispersible powders, emulsions, solutions in oils, and aerosols.

DDT dusts are used for controlling insects on growing crops, for household uses, and for controlling certain parasites of domestic animals. Agricultural dusts contain from 1 to 5 percent DDT. Like practically all insecticides, DDT may under certain conditions cause some plant injury. It has been reported as injurious to squash, cucumbers, and cantaloupes, and it should be used on these crops with considerable caution and at low concentrations. On the other hand, it has proven by far the most effective insecticide yet found for controlling the pickle-worm and melon-worm in these same crops.

On practically all other crops, DDT can be used with relative safety. Another factor to consider when using DDT on vegetables,

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New Year's greetings and best wishes for 1947

For the past thirty-eight years it has been our privilege to serve the growers of Florida. During that period we have seen this stalwart group of citizens overcome many seemingly insurmountable difficulties. The new year brings many new problems, but it will also bring many fine new opportunities for the progressive growers of this State. It will be our desire during 1947, as always, to cooperate in every forward movement in agricultural development throughout Florida.

We again extend our very best wishes to our friends and customers and to every individual grower in the State.

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The Citrus Industry
EXCLUSIVE SPECIALIZED CITRUS PUBLICATION
Issued Monthly
Representative of every interest
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Growers And Shippers Study Citrus Problems

Florida growers, shippers, packers and canners in the greatest gathering in many years met with the Florida Citrus Commission in Lakeland for the study of the vexing problems brought about by the almost unprecedented slump in prices in the history of the industry.

As the result of this meeting, attended by more than 500 citrus growers and factors, steps were taken for a comprehensive study of the factors which have brought about the present serious situation. An expert was hired to make a study of foreign markets, particularly in Great Britain, with a view to expanding export trade; appointment of a committee of the Florida Citrus Commission to investigate a complete revision of present grade standards with weight as the prime factor; an investigation of the feasibility of applying a prorate system of shipments, which would restrict each shipper to a specified quota.

These were only two of a wide range of proposed remedies offered at the meeting called by the Florida Citrus Commission.

The meeting voted down a proposal to condemn the continued use of artificial coloring of citrus fruit, which was denounced by some speakers as primary cause of Florida's poor prices and was defended by others as a necessity in marketing.

Other measures suggested, but which died without action, included a special session of the legislature to pass a law guaranteeing the grower a return "at least equal to his cost of production;" movement of auction markets from Northern terminals to Florida; prohibiting shipment of any oranges before Dec. 1; a minimum price for canned citrus; and a chain of retail orange juice stores in the North.

Urges Grade Revision

H. G. Miller, Orlando shipper, proposed the complete revision of present grade standards, to include categorizing by weight and internal quality, as well as external appearance.

His plan would set up an "A" grade for oranges; consisting of a 90-pound weight minimum, bright, with a 10 per cent solids content. His "B" grade would range from 80 to 90 pounds in weight, with a 50 per cent discoloration tolerance, and 9 per cent solids. Any oranges below "A" or "B" qualifications would fall into the "C" grade.

Miller moved that the commission appoint a committee to investigate the broad grade revision program, and the motion was seconded and strongly supported by Tom Stewart, lawyer and grower, DeLand.

Stewart argued that under present regulations too many oranges of "inferior quality are going out of the state under the same label as our best oranges with the result that our entire price structure is pulled down."

"Want Action Now"

"I think the commission has studied maturity revisions long enough," Stewart declared, "we want action now so that we can ship our fruit under a label we can honor."

H. M. Riley, federal citrus inspector, said that such a change in regulations would require consultation with Texas and California growers and would therefore require some time to put into operation.

Stewart urged immediate action during the coming shipping holiday period, so that "Jan. can be be the demarkation point that Florida has an honest grade."

Following this general meeting of growers and others interested in the industry, the Florida Citrus Commissioon approved a suggestion to employ an expert to study the foreign market situation, and hired Julian Langner to make a thorough export survey at $1,500 per month, plus office and travel expenses. The Commission also asked Washington to establish a tighter "combination" grade on oranges, one

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Readjustments In Processing And Marketing Citrus Fruits

Summarizing a study by members of the Bureau of Agricultural Economics, United States Department of Agriculture, the Bureau issued an elaborate report dealing with the production, cultural practices, preparation for market, processing and trade trends. This paper is a partial reproduction of this summary recently issued by the Bureau, after the most comprehensive study of the citrus situation ever attempted by the Department of Agriculture. The concluding portion of the summary will be printed in the next issue of this magazine.

Production of all citrus has contained to increase rapidly and no immediate leveling of the trend is apparent. Rapid technological developments in processing have enabled part of this increased production to be diverted to processing channels, much of which output has been taken by the armed forces and lend-lease. The domestic market has absorbed increased quantities of citrus and citrus products during the wartime shortages of alternatives. As the recent high level of citrus production was dependent on markets that were influenced by wartime needs, certain shifts in market outlets probably will be necessary within the next few years.

The purpose of this study is to examine trends in production and prices and to evaluate outlets which may keep prices in line with costs of production. Inquiry into outlets include an estimate of opportunities for increasing exports of citrus and citrus products, for improving the competitive position of fresh citrus marketed domestically by economies in marketing, and possibilities of expanding outlet. Consideration of processing includes techniques and costs of production, and the competition faced by citrus products and byproducts.

Potential Supply

Citrus trees develop in size and bearing capacity for many years after they are planted. Under favorable conditions of climate and soil they continue through a much longer productive life than other tree fruits. Their production can be estimated for a considerable period into the future, therefore, though information is not complete concerning average length of productive life. Only a small percentage of the trees in the United States are as yet old enough to indicate their average productive life span. The end of productive life is here assumed to be the time at which groves will have passed the period of maximum production and declined in annual yield to one half of their maximum. It is further assumed that when that point is reached, it will be more profitable to remove the groves and replant, or put the land to other use, than to continue the old groves. Profitable productive life will vary by variety of fruit and by States, including such variable factors as soils and climates. For each fruit in each area two forecasts are made which represent the upper and lower limits of a 20-year range in length of productive life, designated for each area as "long life" and "short life." Using the available information on age distribution of trees in 1944, and yield by age, four estimates are made for each fruit in each major producing area, on the following combinations of the assumptions: Long life, with full replacement plantings: long life, with no additional groves planted; short life, with full replacement plantings; and short life, with no additional groves planted. It is believed that these several assumptions represent probable extremes and that future production actually will fall somewhere within the range of the four estimates.

On these bases, ranges in production of all citrus by 1969 are estimated between 15.4 billion and 21.7 billion pounds, to be compared with a production of 10.2 billion pounds for the 1937-41 average, an increase ranging between 51 percent and 113 percent. By 1969 production of oranges is estimated to range between 10.0 and 13.3 billion pounds, of grapefruit between 4.5 and 6.7 billion pounds, and of lemons between 0.9 and 1.7 billion pounds, compared with 6.2, 3.9 and 0.9 billion pounds, respectively, for the indicated average. Chief increases are expected in Florida and Texas oranges and in Florida grapefruit.

Trends, In Citrus Prices

Continuing large crops of citrus appear to be in prospect judging from trends in production. Military requirements for fresh and processed citrus fruits are expected to decrease sharply for the next year or so and, thereafter to comprise only a small percentage of total production. It may be possible to increase slightly the exports of citrus. The increased supplies that will be available to domestic civilians will face increased competition from other domestically grown fruits, from enlarged imports of bananas and pineapples, and to a certain extent from foods in general.

Prices that growers will receive for citrus fruits will be conditioned not only by the size of the citrus crops and by competition from other fruits but also by general business conditions. Under a condition of full peacetime employment, a citrus crop of 120 million boxes might bring an average price of approximately $1.75 a box; a grapefruit crop of 70 million boxes might average only about 80 cents a box. Under conditions of moderate employment, prices might average 20 to 25 percent lower. At best, the prospective large crops of oranges and grapefruit are likely to bring prices below the high wartime levels.

World Citrus Production and Trade Outlook

World production of citrus fruits has increased during the last 25 years at the average rate of about 8 million boxes per year. From approximately 116 million boxes in the 1919 season, production expanded to an indicated crop of 314 million boxes in 1944. Aside from seasonal variations, the rate of increase was fairly constant during

these years until economic repercussions of the war began to be felt. The 1940 crop set a record to that time of 313 million boxes. In later years production dropped sharply in countries that were dependent on overseas markets, as a result of the adverse economic conditions which were severely felt by citrus growers and exporters. In general, less fertilizer, spray materials, labor, and other essentials were available to the industry and often there was no economic incentive to encourage careful attention to groves. The seriousness of the wartime citrus depressions in these countries tends to be concealed in the over-all statistics, because production continued to increase in the United States which relied almost entirely on a strong domestic market.

The most recent available information indicates that out of a total of 310 million boxes of citrus produced in the 1943 season, 224 million were oranges, tangerines, and mandarins; 58 million were grapefruit; 24 million were lemons; and nearly 3 million were limes.

Oranges now account for about 73 percent of the world's total citrus production, a slightly smaller percentage than before 1940 because of the relatively faster increase in grapefruit production. The trend of citrus production in general is closely paralleled by the trend of orange production, since oranges account for the major part of citrus production.

In the 5-year period 1920-24 orange production averaged 102 million boxes per year and increased steadily until the 1940 season when production was estimated at 232 million boxes, the largest crop ever reported. In the next season, production dropped to 216 million boxes, but later resumed an upward trend and reached 230 million boxes in the 1944 season. The United States now produces about 49 percent of the world's orange crop; Brazil, 9 percent; Spain, 8 percent; Italy, 5 percent; Palestine, 2 percent; and the remaining 5 percent is produced in many other countries.

Before the war, 45 to 50 million boxes of oranges or about 20 percent of the crop entered into world trade. The major exporting countries were Spain, Palestine, the United States, Brazil, Italy, and the Union of South Africa. The United Kingdom has been by far the greatest import market, taking about one third of the total world orange imports. Germany, France, Canada, and the Low Countries took another third between them, and one third went to minor importing countries. Disruption of trade by the war has caused severe disturbances in many producing areas but, in general, on the resumption of normal commerce oranges should move again in the prewar pattern of international distribution.

Much fewer grapefruit than lemons were produced in the world 20 years ago but now production of grapefruit is more than double that of lemons. The grapefruit industry is dominated by the United States which produces about 97 percent of the world's total. Production has increased at a rapid rate, from 7 million boxes in 1920 to 58 million boxes in 1943.

Before the war about 8 percent of the world's grapefruit production entered into world trade, the United States and Palestine supplying almost the entire needs of importing countries. During the war world trade was reduced to about 2 percent of production.

Lemon production has shown less spectacular though substantial increases during the last 25 years. Average production from 1920 to 1924 was less than 20 million boxes. Increasing slowly thereafter, it reached 33 million boxes in 1940. Production since has been somewhat lower with an indicated crop of 27 million boxes in the 1944 season. Since 1938, the United States has replaced Italy as the largest producer of lemons; the two countries together produce about 80 percent of the world's total. Italy exported most of its crop to other European countries, mainly to Germany and in smaller quantitties to the United Kingdom and other countries of Europe. Only a small part of the production of the United States enters into the export trade.

As conditions in the producing countries in the Eastern Hemisphere approach normalcy and groves are rejuvenated, some increase in citrus production can be expected. Added to the ever-increasing United States production, this probability intensifies the difficulties of finding satisfactory outlets for all the citrus fruit that may be grown for market.

Rehabilitation of international trade in citrus during postwar years will be difficult because of deficiencies in exchange, the necessity of using the limited available exchange for buying primary food supplies and industrial goods, and the relatively low levels of consumer purchasing power anticipated in the importing countries of Europe. These diffiiculties may deter the restoration of citrus production in Spain and Italy particularly. Reduced export outlets seem to be in prospect also for United States oranges and grapefruit and for Brazilian oranges. In Brazil, a disease known as "Tristeza" (Sorrow) recently has seriously damaged the orange-producing capacity and may mean Brazil's serious decline as an important orange-exporting country for some time to come. Countries in the Western Hemisphere may have to look even more to processing and to new industrial uses to absorb a larger part of the citrus production in the future, and may also find it advisable to expand the domestic markets for fresh fruit through consumer education and other means.

Preparation of Fruit for Fresh Market

Experimentation upon maturity standards of fresh citrus and upon best methods of washing for packing, of control of decay, degreening, adding color, wrapping, storage, and shipping has been constantly in progress by citrus research laboratories, both public and private, and considerable information has been made available during the last few years.

Maturity standards are still on the same bases, in all States. In Florida, owing to results of the fertilizer program, in which the minor elements are utilized as well as the major, it has been possible further to raise the standards in determining grades. Advancements in the washing of fruits for packing have included improvements in machinery and the use of new wetting agents to be added to the soap solutions.

Considerable experimental work has been undertaken in both California and Florida in the control of decay in citrus fruits. Orthophenylphenoxide has been found to give good control for decay, and resulting injury to the rinds has been overcome by adding commercial formaldehyde solutions. Thiourea has been found to give definite experimental control for stem end rot and green mold decay of oranges, and may be appropriate in the aqueous phase of the proprietary wax emulsion to prevent wilting of fruit during storage.

Recent studies have shown that more dilute concentrations of

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"Little California" In The Soviet Union

By Leo Lempert

Florida citrus growers are primarily interested in their own peculiar problems of cultural practices, marketing systems and price range of their own crops. But, in view of the vast expansion of citrus growing throughout the world, it is well that they should acquaint themselves with what other citrus growers are doing in other sections and in other lands. Latest comers into the citrus field are the groves now being expanded in the sub-tropical regions of Soviet Russia, where state owned groves are being developed on an extensive scale. The accompanying articles give some insight into these activities.

If you will get out your wartime map, the one on which you may have followed the Battle of Stalingrad, and run your finger along the eastern coast of the Black Sea you are sure to come upon Sukhumi. This is the center of Abkhazia. An Autonomous Soviet Socialist Republic which forms part of Georgia, Abkhazia is a tiny land that stretches along the shore of the Black Sea Coast for more than one hundred miles but extends inland only on a small strip of territory which at times is not more than 20 miles wide. It runs up against the spurs of the Caucasian Range. Though small in territory it has in recent years gained fame as one of the main producers of subtropical crops in the Soviet Union and it may rightly be called the Soviet's "Little California".

What does Abkhazia plan to do in the current five-year plan in the field of subtropical plant cultivation? To get an answer to this question I interviewed Georgi Berulava, who is Minister of Industrial Crops of the little autonomous republic and is an agronomist by education.

"The further expansion of subtropical plants looms big in the five-year plan of our republic," Berulava said. "And there is ample reason for it, since the coastal lands of Abkhazia possesses exceptionally favorable soil and climate conditions for the growing of citrus fruit, tea, tung, eucalyptus, bamboo, geranium and other natives of the subtropics."

He noted that the biggest increase is projected for citrus groves whose area in 1950 is to reach nearly 20,000 acres as compared with a little more than half that acreage at the beginning of this year. More tea, vines and fruit trees are to be planted. The area under tea plantations is to be expanded by more than 5,000 acres and will exceed 29,000 acres. Some 2,500 acres more of tung trees are also to be planted.

Major attention will be devoted to eucalyptus trees. In the next five years more than 11,000,000 of them are to be planted and the territory of this tiny republic will abound with alleys, groves and entire tracts of this valuable species.

Berulava emphasized that Abhazia's prominence as a subtropical plant grower is a recent achievement. Twenty-five years ago the entire area under subtropical plants comprised only a few dozen acres. The farmers then possessed little tracts of land and were overburdened with taxes and levies and were in constant dependence on landlords. New crops were not undertaken. In those years subtropical plant cultivation was confined to a few amateur gardeners. Fertile lands remained either untilled or were utilized for villas and country homes by the tsarist officials and the landed gentry. During the years of the Civil War agriculture deteriorated. With the end of that conflict the soviet government devoted great attention to the problem of subtropical plant cultivation. Stalin, a native Georgian, personally handled this problem with the aid of his close associate, L. P. Boria, directed this development in Georgia.

Subtropical crops—citrus fruit, tea, tung, etc.—were introduced on many thousnads of acres in Georgia as a whole. Abkhazia formed an important part of this development. The success of this extensive program was aided by the Soviet Government which extended long-term credits to collective farms, supplied seedlings and other stock, and financed large-scale research.

Passing to a more detailed discussion of the current five-year plan the Minister pointed out that its realization will demand great efforts on the part of the collective farmers and scientists. As an example he cited the fact that more than 3,400,000 plants are needed for new citrus groves to be laid out in the coming five years. In this connection existing nurseries have been greatly enlarged.

To protect the citrus groves from cold winds the program also calls for the planting of a protective fence of trees and shrubs over a length of 600 miles and of shelter belts for nearly 390 miles.

The plan lays chief emphasis on the development of oranges and lemons. Of the new area of more than 9,500 acres, 4,750 are to be in oranges, 3,250 acres in lemons and only 1,500 acres in tangerines. New groves will be planted with the best varieties that have proven their worth such as Washington—Naval, Korolek, Hamlin and Pervenets for oranges, New - Georgian, Villa-Franka, Lisbon, for lemons.

Berulava stressed that the five-year plan provides not only for greater areas but also for a considerable increased yields per acre. Great aid in achieving the second goal is to be rendered by scientific institutions. Abkhazia's agriculture, in particular, is looking forward to work of its selection station working with humid subtropical plants and the Sukhumi branch of the All-Union Research Institute of the Tea Industry and of Subtropical Plants. Agriculture expects from the scientists new frost-resistant varieties of citrus fruits and also advanced methods of cultivation that make for stable, high yields.

Bigger yields are to be promoted by the greater application of fertilizers, both mineral and organic. Greater utilization of machinery for

the cultivation of subtropical crops is contemplated.

"The job ahead is big indeed," the Minister stated in conclusion.

A CITRUS AND GRAPE FARM

A veritable citrus fruit and grape "factory" is the best way I can think of describing the Ilyich State Farm in Georgia which I had occasion to visit recently. (The Republic of Georgia is described in the booklet "The Sixteen Soviet Republics". One of the biggest and best-known state farms specializing in the growing of citrus fruit, it is located some ten miles from Sukhumi on the Black Sea Coast, right in the heart of a large subtropical farming area.

The Ilyich State Farm with its more than 1,000 acres comprises a little community of its own with its offices, farm buildings, living quarters for the personnel, kindergarten and medical station.

A short drive brings you to a group of one-story buildings; the offices and dining room of the farm. In front of the main office is a tiny square planted with palm and eucalyptus trees fenced off with a railing. In the middle of it stands a statue of Lenin with his outstretched hand pointing to the hills as though urging the people to avail themselves of nature's bounties. The farm is named after Lenin (Ilyich is Lenin's patronymic. His father's full name was Ilya Nikelayevich Ulyanov.)

Even at first glance you realize that Ilyich farm is "big business". It was from middle-aged, stocky, gray-haired Levan Zadelava, its efficient manager, that we learned of its background, its present status and future plans.

The farm was organized in 1921. Previous to them fruit and grapes grew on most of the land. Only feeble attempts had been made to introduce citrus fruit and there was practically none on the land until, in line with the general program of introducing subtropical plants, it was decided to devote most of it to citrus groves. Zadalava recalled that there were plenty of skeptics who claimed that the tender, heat-loving tangerines, oranges or lemons would perish. With the aid of scientific institutions were selected varieties which were most suited for the soil and climate.

The local farmers watched with interest the pioneering work carried on by the state farm. The farmers in Georgia, like farmers all over the world, have one thing in common with the man from Missouri, they have to be shown. And it was the Ilyich State Farm that did the showing to neighboring farmers as far as citrus fruit growing was concerned. It showed that it could be grown and that it was a paying business.

But it did not stop at that. In the early years the state farm supplied neighboring collective farms with a great deal of the seedlings needed for the citrus groves, having set up a special nursery for that purpose. It also served as a sort of school where farmers came to learn how to grow and care for the golden, vitamin-bearing fruits.

All this of course is now past history but to this day several Ilyich farm experts are helping collective farms with work in their nursuries.

The state farm keeps up its trail blazing activities in devising more advanced methods of cultivation, utilizing the latest achievements of science which are then passed on to the collective farms. The farm's staff is now testing a method of grafting different varieties on the same tree for instance having one and the same tree grow lemons and tangerines. This method is of considerable practical value, as one of the horticulturists explained to me. You could have, say, a tree with early ripening oranges on top and later ripening on the bottom. This would ease up the strain during the harvesting season. Or by having one tree produce both lemons and tangerines, you would be sure to get a crop of the more hardy tangerines in case the lemon crop failed.

The state farm has today close to seven hundred acres under various crops of which 295 are under tangerines, 50 under lemons, 22 under oranges and five under grapefruit. Nearly 120 acres are given over to apples and pears. Vineyards occupy 35 acres and bamboo groves 50 acres. A newcomer is the Kazanlyk Rose which yields that most valuable ingredient of perfume, the attar of roses. More than ten acres have been planted to roses this year.

As we walked up the hills past the rows of citrus fruit Zadelava fondly spoke of each variety and grade. Together with varieties imported from the United Stattes and Japan, the farm has also varieties developed by Soviet selection

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CITRUS INTERESTS AROUSED

To just what extent the recent meeting of Florida Citrus interests at Lakeland may be the forerunner of appreciable results, is problematical. Centain it is that the meeting demonstrated that citrus growers, packers, canners and shippers are thoroughly aroused by the recent and prevailing slump in the price of Florida citrus fruits. Not in recent years, if ever, has there been such widespread interest and such a gathering together of citrus interests as that demonstrated at the Lakeland meeting.

Discussing the situation from every possible angle, numerous remedies were proposed, some basic, some artificial and purely temporary. Out of the numerous proposals, two were accepted and started on the way to consummation.

One applies to the employment of an expert to make a survey of the possibilities of expanding our export trade, particularly in Great Britain; the other to broaden the scope and operation of the present "combination" grade for oranges. The first of these proposals brought forth vigorous and prolonged opposition, but was finally approved by the Florida Citrus Commission. The second was approved without opposition.

Among the suggestions presented and discarded or sidestepped by the Commission were those which would have prohibited shipment of any fruit prior to December 1 of each year; prohibiting the use of "color added" to citrus fruits; asking the legislature to enact a law which would guarantee the growers at least the "cost of production." Each of these proposals had supporters at the meeting, but failed to bring forth sufficient strength to gain approval.

One noteworthy feature of the meeting was the fervor with which supporters of each proposal defended their position, but without the usual rancor which has so frequently attended similar meetings in which all classes of growers and affiliated interests were concerned. This at least is an encouraging feature, for every possible element of the industry was ably represented at the meeting.

That more might have been accomplished toward solving the many perplexing problems facing the industry is quite certain; that even so much was accomplished without undue friction is encouraging. But, until we have more stringent maturity laws which will bring the legal test more nearly in line with the taste test, the citrus problems will not be solved.

HORSEY PROPOSES CITRUS COUNCIL

One of the really worthwhile proposals growing out of the recent citrus industry meeting at Lakeland is one by J. William Horsey, a leading figure among canners and shippers of citrus fruits.

Boiled down to its essentials, Mr. Horsey's proposal is that the industry proceed to organize a Citrus Council broad enough to embrace every element in the industry—growers, packers, shippers, canners, by-products makers and marketing experts familiar with the industry.

Mr. Horsey points out that up to now each element in the industry has acted on its own, without regard to the rights, privileges and welfare of any other element. Even among the members of the same element there has been the tendency to consider only their individual problems without regard to others in the same element. In short it has been "dog eat dog" and "to hell with the others in the industry."

Under Mr. Horsey's proposal there would be a Council composed of at least one member from each element within the industry, chosen by the members of that element. Speaking along this line, he says:

"Fundamentally, the citrus industry is one industry. It involves, however, the grower, the shipper and packer of fresh fruit, transportation, canners, brokers, wholesale jobbers, and retailers—chain and independent. It is not necessary for me to point out to you that the industry is vital to Florida, but there is no room for selfish, rugged individualism. The practice where the grower, the packer, the canner, and the retailer work more or less alone, endeavoring to secure for his own function the best break possible without consideration of the essential elements making up the progressive distribution of citrus products, fresh or processed, from the grower to the consumer's table calls for a readjustment of thinking on the part of all and a concerted effort to do a sound and effective job of merchandising."

We believe that Mr. Horsey has something there. Mass meetings of all concerned with the industry, however much they may desire to do so, seldom reach any practical results. A smaller body of accredited representatives of every element could work out a program beneficial to all without treading on the toes of any particular element. By all means it is worth trying—we have tried about everything else.

With this issue The Citrus Industry Magazine begins its twenty-eighth year of publication. It wishes for everyone of its readers a New Year filled with happiness and prosperity and for the industry as a whole continued expansion.

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Soil And Moisture Conservation Studies In Sand Hill Citrus Land

R. E. WITHERELL

Soil Conservationist, Soil Conservation Service, Haines City, Fla.

At Meeting Florida State Horticultural Society

A serious erosion problem is developing on the "Sand Hill" citrus lands of peninsular Florida. Because of the deep sandy soils and the frequent cultivation which obliterates visible signs of erosion, most citrus growers do not realize that they have an erosion problem. The exceptionally long life of budded citrus trees together with their tendency to concentrate feeder roots in the surface layer of soil makes the control of erosion of particular importance. Even slight annual losses of soil might seriously impair the productiveness of citrus trees long before the end of their normal span of potential usefulness.

Frequent heavy applications of commercial fertilizer and the incorporation of green manure crops with the surface soil have resulted in the formation of a fertile but artificial layer on the deep sandy soils in citrus groves. This layer is 6 to 8 inches deep and the major portion of the citrus tree feeder roots are concentrated in it. Although the sandy soils are deep, loss of soil from this artifically enriched layer is of more relative importance than the actual quantity loss would indicate.

The uneven rainfall distribution presents a moisture conservation problem which is becoming more acute as the transpiration surface of the trees increases. Lake water is available for application on some groves during stress periods while other grove owners must pump from deep wells.

Locations suitable for citrus culture are definitely limited and it is therefore imperative that adequate soil and water conservation measures be developed and demonstrated to preserve this valuable industry.

An analysis of the problem of soil and moisture conservation in the "Sand Hills" citrus section has been made and a study of the methods which can be used for their control is in progress. Many of the standard practices used in other parts of the nation to control erosion and conserve moisture appear to have little or no application.

Erosion in the citrus groves, though not so outstandingly apparent as on farm lands in other sections of the country, is threatening serious consequences. Small gullies appear after heavy rains, especially on the steeper slopes. Surface soil movement has advanced in some groves to such a degree that a benching effect has developed on the upper side of the trees with a corresponding loss of soil from the lower side. This translocation of soil is producing noticeable effect on the citrus trees.

The tillage problem is closely related to that of ground cover. The practices commonly employed encourage erosion and water runoff. All cultural operations in the "Sand Hill" section are performed by tractors, the gang moldboard turning plow and the tandem disc harrow being used almost exclusively. These cultivation methods tend to move the soil toward the tree rows, hollowing out the centers between the tree rows, thus causing a concentration of water in these row middles. The continuance of runoff and straight row cultivation at right angles to the contour has had a telling effect in the groves. Pronounced mounds approximately the same diameter as that of the tree spread are commonly seen. This mounding has progressed in some groves to the point of restricting the root system of the trees. Not only is erosion increased and water lost, but the area from which the tree draws its moisture and nutrients is limited.

Contour tillage and terracing, widely used on most crop lands, can play little part here as most of the groves are planted in a straight row system. New plantings are and will continue to be very limited.

Soil surveys show that the major portion of the citrus groves is on Norfolk sand and Norfolk fine sand, which can hardly be called soils in the true sense of the word. In their virgin state they consist almost entirely of inert material with very little organic matter or essential plant food elements. Native vegetation on these sands is a scattered growth of long-leaf yellow pine, scrub oak, and wiregrass which leave only a very small amount of organic matter, particularly under the existing climatic conditions. Uncontrolled woods fires and high natural oxidation tended to destroy this thin layer of deposition rather rapidly. In too many cases all material on the land was burned, when these areas were cleared for planting. The different horizons of these sands are almost indistinguishable and the coarse to fine sand extends downward to a sandy clay which may be anywhere from seven feet to, in a few locations, hundreds of feet below the surface.

Probably the most obvious means of conserving soil and moisture lies in the production of annual winter and summer ground cover in the groves or in the production of vegetative material on other lands which can be applied artificially to the the groves.

Moisture deficiency limits the production of cover crops to two periods of the year; one during the summer months after the rainy season begins, and the other after the dry period of the fall when the natural soil moisture is little more than adequate for the citrus needs. Promising results with winter cover were obtained in the vicinity of Haines City when the land was irrigated at the time of seeding.

Another factor which influences a ground cover program is the competition for sunlight which immediately limits the known cover crops. As the trees grow this competition becomes keener and some mature citrus groves have reached a complete canopy, excluding entirely the direct rays of the sun and shading entirely the ground surface.

The possibility of producing mulching material anywhere except in the groves is limited. The only type of farming practiced is citrus production and with few exceptions the entire cleared area is planted. The shortage of available cleared land makes it difficult to obtain much locally grown mulching material for transportation to the

groves. Norfolk sand limits to the extreme this kind of material, however, in the low cold spots within or adjoining the groves where citrus production is not practical some mulching material can be grown. Also in the wet areas adjoining some grove plantings certain types of vegetation can be produced for mulch and provide food for bees and wildlife.

Although there is an average of more than 50 inches of rainfall annually, its distribution is uneven. The heaviest precipitation occurs during May, June, July, and August with only a moderate rainfall during the winter months. A dry period generally develops in the spring and fall. The carry over of moisture from the light rainfall of the winter months is slight and the groves usually suffer throughout the spring until the summer rains begin. This shortage of spring moisture has caused the growers to practice clean culture during these months.

The uneven rainfall distribution influences the tree growth and fruit development not only directly but indirectly as it affects the cover crop program and time and method of tillage.

Norfolk sands have a low water holding capacity and are unable to store the excess water during the summer rains to supply tree requirements through dry periods. Fortunately, requirements are greatest during the summer rainy season as the fruit is developing in size and the foliage is increasing. A serious deficiency usually occurs during the spring months causing the young fruit to drop from the trees and at times reducing the quality.

Improved fertilizer formulas have increased the leaf area and amount of foliage on the citrus trees. As the water requirements of each tree is increased the water demand on the available supply is greater.

There are numerous lakes in the "Sand Hill" citrus section and deep well water is available. This supply of water has been considered adequate. However, because of the increasing demand, an accurate survey of available water for irrigation is needed. If the rainfall were distributed according to the moisture requirements of the citrus trees there probably would be adequate moisture. However, when it is noted that rain in excess of requirements falls only during June, July, August, and September, a deficiency develops during the remainder of the year. Indications are that most groves, to maintain their normal growth, need artificial water during the stress periods and this water must be supplied artificially.

Accurate information is needed to show when to make artificial applications of water, the amount needed, and the optimum rate for best results. The time of application of water by artificial means is now governed by visible tree wilt. When this wilt is apparent considerable damage has naturally been done to

(Continued on page 18)

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it will be necessary, more than ever before, for growers to produce clean fruit of good quality. Be sure that applications for the control of melanose scale and other pests or diseases are properly timed. A NACO man can help.

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Reports Of Our Field Men . . .

NORTH CENTRAL FLORIDA
V. E. (Val) Bourland

We reported last month that fruit was falling very fast and this condition has not changed since that time. The loss will be heavy on many varieties and in stme cases the loss will amount to as much as 20 per cent. There is some pepper moving to market but the price is bad. Some cukes are moving but the price is low here too. There will be a large acreage of melons and plantings are now under way. We have had a heavy infestation of scale and many growers are spraying with oil at this time. Also there has been an infestation of red spider that is causing considerable damage and in some cases wood is being killed. Prices prevailing at this time are not too satisfactory but most growers are hoping for better conditions after the holidays.

POLK COUNTY
J. M. (Jim) Sample

As of this writing, the latter part of December, many groves are beginning to get dry, but with warm weather prevailing, most growers are hesitant about irrigating because of the cold hazard. Trees are not dormant and fruit quality poor with little chance of improvement until some constant cooler temperatures. Cover crops are beginning to grow again and heavy fruit droppage prevails, both attributed to warm weather. Several colonies of purple mite have been observed lately with some defoliations occurring due to the mite. However defoliations also observed that was caused by hot winds with low moisture conditions and purple mite definitely not responsible. Fruit movements to canneries very slow with supply still heavy.

SOUTHWEST FLORIDA
Eaves Allison

Growers in this section are rather despondent over the prices being paid for fruit and there is a great hesitancy on the part of many growers to let their fruit go to market. However, it appears that packing houses and canneries are getting all of the fruit that they need. The situation with the vegetable growers is not too much different as most vegetable prices have been below the price anticipated. There will be a heavy acreage of all varieties of vegetables planted this spring. We are having defoliation on many groves throughout the territory as a result of winds and lack of moisture in the tree combined with various mite damage. We have recently noted that this defoilation is much heavier where mite have been active and this is true even in the case of rust mite.

WEST CENTRAL FLORIDA
E. A. (Mac) McCartney

As of this date there has been no rain in this territory for two months with the exception of light showers in spots which was of little benefit. Growers are irrigating and hoping for rain. There is very little optimism as to prices although they are hoping that the price received for valencias will to some extent offset the depressed prices received so far this season. The fall fertilizer application has been applied and most growers gave their trees an ample amount of well balanced mixtures with a complete range of secondaries. There is some question among growers as to what will be their attitude regarding the spring application of top dresser. Vegetable growers have been having good yields with the exception of strawberries which have had a light production.

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HILLSBOROUGH & PINELLAS COUNTIES
C. S. (Charlie) Little

We are experiencing a very dry fall season and it continues warm causing extremely heavy fruit droppage on all varieties but particularly heavy on mid-season oranges and grapefruit. Market is low and many growers are very despondent over this situation, but are hopeful that the price received for valencias will be better. It looks like a lot of tangerines will not be picked as they are already getting puffed and dropping. Furthermore there has been some repudiation of contracts. We have finished our fall application of fertilizer and groves as a whole are in very fine condition, but growers are worried over the fact that the trees are in a growing condition and are worried over cold weather that might come later in the winter.

SOUTH POLK & HIGHLANDS COUNTIES
R. L. (Bob) Padgett

Groves in this section have suffered badly during the past two months from dry weather and with low moisture in the foliage of trees coupled with heavy infestations of mite has caused considerable defoliation all through this section. Many growers state that they have never seen so much new growth at this time of year in their memory. We have also noted quite a bit of bloom in many groves. There is a heavy droppage of fruit all through this section and it seems that this condition is becoming progressively worse. With the continuous hot weather fruit is breaking down bad and many packing houses are complaining about the fruit that they are having to ship. If we could get a prolonged cool spell this situation will be greatly improved. Prices continue very low and there is very little buying activity at the present time.

ADVERTISEMENT—LYONS FERTILIZER COMPANY

Uncle Bill Says

That while citrus fruit prices are not too hot right now he's mighty optimistic over a rapid improvement in this situation, and he wants to wish everyone a truly Happy New Year and the fullest possible measure of prosperity during the year

1947

Seasonal Insect Control Pointers...

A. N. TISSOT
Entomologist, Florida Experiment Station

It may seem a little strange to begin a discussion on the control of insect pests, by talking about the weather; but weather is always a good subject for conversation and it does have a direct and important bearing on insect activities.

The weather in Florida has been unusually warm this fall. For instance, at Gainesville the mean or average temperature for November was nearly 7 degrees higher than the normal temperature for the month. This difference was due more to unusually mild nights rather than to high day temperatures, for the average minimum temperature at Gainesville was almost 10 degrees above normal. There has been no really cool weather yet, and during the entire fall Gainesville has had only 6 nights when the temperature went below 55 degrees and only 3 when it went slightly below 50 degrees.

Rainfall and moisture this fall have been generally favorable for insects, so it is obvious that they have enjoyed almost perfect conditions, insofar as weather is concerned. This means that many insects which ordinarily cause little trouble at this time of year, are still very much in evidence and in some places quite troublesome.

Cockroaches furnish a good example to illustrate the effect of weather on insects. These insects are able to live out of doors throughout the year in Florida, but during cold weather their development is much retarded and their numbers greatly reduced. This year, however, with little cool weather to check their development, they apparently are just as numerous out of doors as they were in midsummer. This means that there still are plenty of roaches watching for opportunities to enter houses; and Florida householders must be on the alert to prevent roach infestations from developing in their homes.

Since insecticides containing DDT have become available, roach control is comparatively much easier than it was before. DDT acts upon the nervous system of roaches. It can be absorbed directly through the surface of the body or through their feet when they walk over treated surfaces. It acts rather slowly and some roaches may live for several days after coming in contact with it. Usually, however, they will be on their backs and unable to walk within a few hours after the DDT touches them. Although it kills slowly, DDT is highly effective in roach control because of its residual or lasting effect. Roaches may be killed by walking over treated surface for weeks or even months after the insecticide is applied.

The forms of DDT suited for roach control are a 5 percent solution of DDT is deodorized kerosene or other light oil and a 10 percent powder. Control may be attained by the use of either material alone, but quicker and more satisfactory results will usually be obtained when the two are in combination. Each material should be applied in the places where it is most suitable. The solution in oil does not leave a visible residue on most surfaces and it should be used in exposed situations where a dust residue would be objectionable. It can be used on walls, woodwork, picture frames, and furniture, and also on the under surface of tables, shelves, and other places where the dust will not stick. The solution is most readily put on with a sprayer, but it can be lightly applied with a brush if desired. A coarse spray is preferable to a fine fog-like mist, and enough material should be put on to thoroughly moisten the surface, but not enough to cause the liquid to run off.

A small hand duster is practically essential for the proper application of DDT powder for roach control. The powder should be blown into cracks and crevices, behind moldings, door and window frames, behind and underneath the sink and drainboard, around water and gas pipes where they run along the wall or go through the wall, inside cupboards and cabinets, and behind drawers and around drawer spaces.

In fact, one should attempt to locate and treat every single place in which roaches may hide.

A knowledge of the habits of roaches is helpful when one is using measures to control them. They do not all behave just alike nor are they all found in the same places or situations. The large dark brown American and Australian roaches are usually found in the lower parts of houses and in rather damp situations. The smaller German roach is most commonly found in the kitchen, especially around or under the sink, and sometimes in the bathroom. The brown-banded roach which is becoming more prevalent in Florida is usually found scattered all over the house. It seems to prefer high places and small groups of them often are found in the upper parts of cupboards, in desks, in radio and sewing machine cabinets, and on the under-sides of tables and chairs. It is thus evident that the insecticides must be thoroughly and widely applied when this roach is present.

When using DDT in the home, one must keep in mind that it is somewhat toxic to human beings, and that it is necessary to take precautions to protect foods, and to avoid contamination of kitchen utensils, dishes, and silverware.

A small, pale green plant bug has been causing some damage to lettuce in certain sections of the state. It is a sucking insect and its feeding causes brown areas to develop in the leaves. The same insect, or another very similar one, has been causing rather severe injury to chrysanthemums in other places.

Like so many of the other plant bugs this insect appears to be rather hard to control. A 10 percent DDT dust has proven effective against it and should give satisfactory control on ornamentals and young vegetable plants where it can be safely used. DDT should not be used on most vegetable crops within three weeks of harvest time.

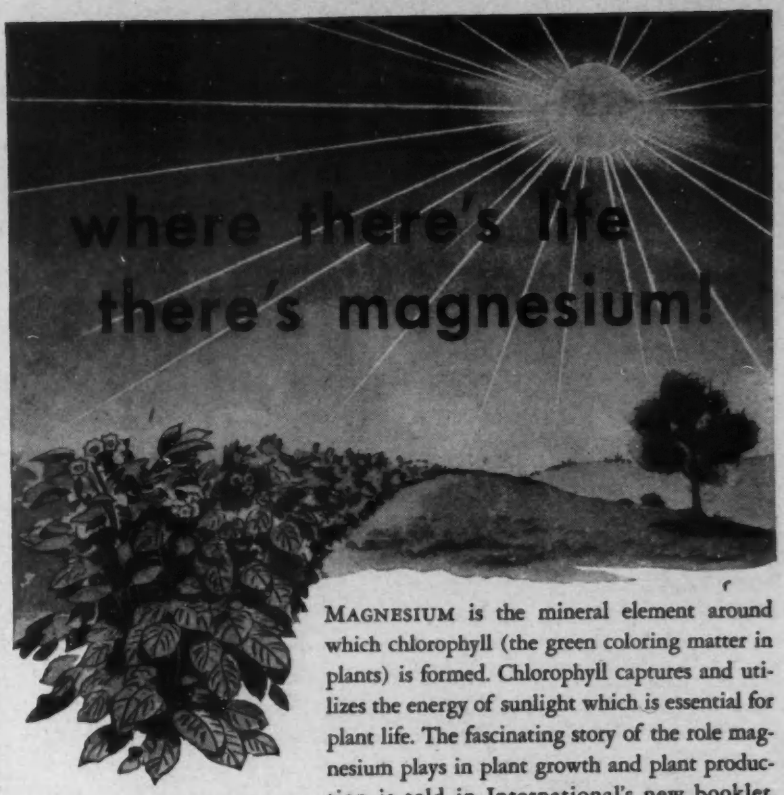
If these plant bugs attack nearly mature crops of lettuce or other leafy vegetables, the growers will have to resort to rotenone or other non-poisonous insecticides to control them.

During the past few weeks, several persons have sent the Experimental Station leaves of citrus or ornamentals with small, raised, reddish bodies on the under sides, and have requested information on how to control them. A brief discussion of these red bodies may save unnecessary concern or worry to others who may chance to notice the same things on their plants. Instead of being injurious to the plants, these objects are definitely beneficial, for they are the fruiting bodies of the red aschersonia fungus. This fungus attacks the larvae of whiteflies and kills them. When a number of these round, velvety, red bodies are found on a leaf it almost always means that every whitefly on the leaf has been killed.

There is another condition often noticeable on leaves having the red fungus bodies on them. These leaves often appear sooty or smutty, especially on the upper side. This condition is caused by another fungus having a different relationship with the whiteflies. The whitefly larvae give off large quantities of a sweetish liquid commonly called "honey dew". When this falls on the leaves or branches of plants it serves as a good medium for the growth of the fungus, which forms a thin black flim over the surface of objects on which it grows. This sooty mold itself causes little or no injury to the plants, and it need cause no concern if the whiteflies have been killed.

In conclusion Dr. Tissot says that the Entomology Department of the Experiment Station in Gainesville is interested in learning all it can about the distribution and seasonal abundance of insects, and particularly insect pests. So if you notice insects that you have not seen before, or see certain ones at seasons when they do not ordinarily appear, collect a few specimens and send them to the Experimental Station in Gainesville. The favor will be appreciated and you may be doing the state a real service by detecting some potential insect pest before it has time to get well established.

A hopper of crushed oyster shell should be provided for every poultry flock.



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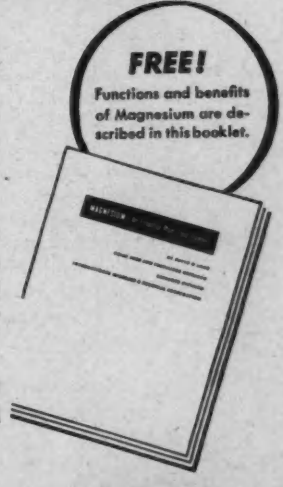

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SOIL AND MOISTURE CONSERVATION STUDIES IN SAND HILL CITRUS LAND

(Continued from page 13)

both the trees and the fruit.

The amount and rate of water to be applied is at best a guess with nearly all the growers, and accurate information is being obtained by the Soil Conservation Service project at Haines City and will be made available as soon as possible.

The studies thus far made indicate four main objectives:

1. To demonstrate the proper handling of all grove cover crops by the use of existing cultivation equipment and any new equipment that may be developed, particularly as to crop residue management or a system of trashy cultivation.

To eliminate mounding around the trees and the hollowing out of the row middles so that equal distribution of irrigation water can be made as well as a uniform wetting of the grove areas.

To study the ground cover program as it affects soil movement.

2. To test and demonstrate the production and proper use of new and native cover crops for citrus groves. Local cover crops now grown are Natal grass, crotalaria, sand spurs, Spanish needles, Bermuda grass, Florida beggarweed, and crabgrass. A few plantings of Alyce clover have been tried. No winter growing cover crops such as blue or yellow lupine, or summer legumes such as hairy indigo have been used to any extent.

3. To study soil moisture and available water supply and to determine and demonstrate the best tested method for the utilization of available water, by artificial application, to supplement the rainfall deficiency.

4. Lend assistance to the growers and proper agencies in the possible development of a fire control program. Also assist in the educational work in fire prevention and suppression.

A cover crop program that growers can follow as a regular practice will be put into effect to provide more ground cover for the citrus groves. This involves a close study of the native volnuteer grasses and planted legumes now in use, and the introduction of several additional summer and winter legumes which have been developed by the Florida Agricultural Experiment Station at Gainesville.

The Soil Conservation Service will, in its recommendations, consider the soil type, rainfall distribution, cultural practices, fire hazards, erosion resistance, and water holding capacity of the residue as well as the partial to complete shading of the ground surface by the citrus trees.

In addition to the production of more cover, the proper management of these crops will be shown.

The cultivating equipment now available and any new equipment that might be developed will be used to manage the cover crops in such a way that the ground surface will be left in a condition less susceptible to erosion and at the same time not constitute a serious fire hazard. Cooperation has been obtained from growers to demonstrate the proper use of each type of implement used in cover crop management. During periods of stress, mowing or chopping will successfully control cover crop growth, thereby reducing the competition for moisture and at the same time provide a continuous stubble mulch for the protection of the soil.

Demonstrations of artificially applied mulch will be made; while this method will be necessarily limited it is believed that strip mulching on critical areas should be recommended where materials are available.

A survey of the existing water supply will be made and information gathered relative to the effect excessive rains and prolonged droughts have on the water table.

Intensive studies are being made to determine the proper time, method, and rate to be used in the artificial application of water to citrus groves.

A nation is no healtheir than its children.

FAIR LABOR ACT STILL STANDS

Liquidations of the National Wage Stabilization Board Feb. 24, as announced by the President, in no way affects the provisions of the Fair Labor Standards Act or the Public Contracts Act, nor their enforcement, it was emphasized by James G. Johnson, Regional Director of the Wage and Hour and Public Contracts Divisions, U. S. Department of Labor.

Dr. Johnson issued this statement after receiving many inquiries concerning both Acts, which include minimum wage and overtime provisions, from employers in Georgia, Florida and South Carolina. Some of the enquiries, particularly in South Carolina, he said, have taken it for granted that all federal laws affecting wages and salaries have been abolished.

"The President's statement and an executive order issued November 9, dealt with the termination of controls over wage and salary adjustments fixed by the Wage Stabilization Act of 1942, which was a war emergency measure", Dr. Johnson pointed out. "On the other hand, the Fair Labor Standards Act of 1938 and the Walsh-Healey Public Contracts Act of 1936 are permanent federal statutes—not war emergency measures.

"Some of the confusion evidenced by the flood of inquiries may have been caused by the fact that the Wage and Hour and Public Contracts Divisions served as operative agents for the War Labor Board and its successor agency, the Wage Stabilization Board, which has a regional office in Atlanta."

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"LITTLE CALIFORNIA" IN THE SOVIET UNION

(Continued from page 9)

stations, such as the Nove-Gruzinsky (new Georgian) lemons.

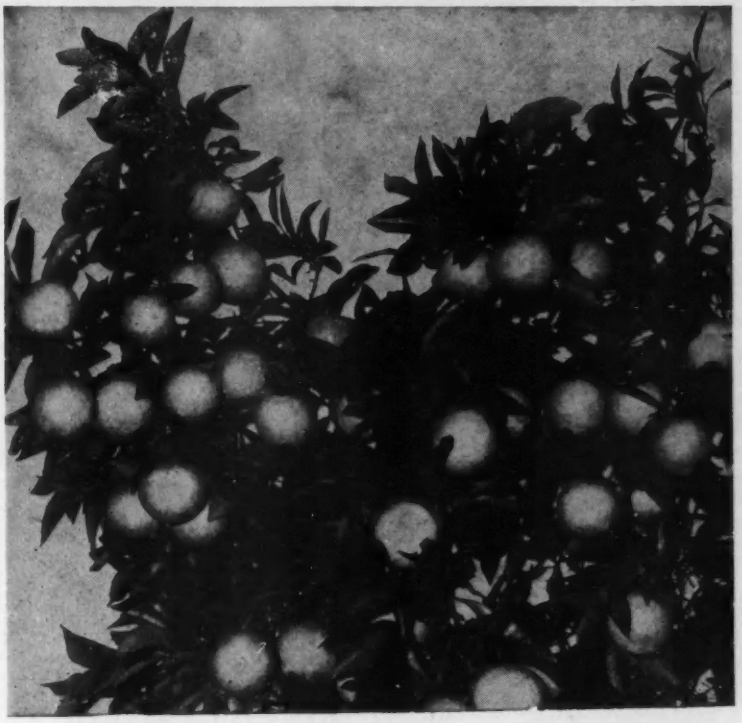
The Ilyich Farm has been noted for its high yields. It won a prize at the All-Union Agricultural Exhibition in 1939 for its yield of citrus fruit. But it does not rest content with its achievements. In the current five-year plan main attention will be devoted to raising the yields still higher, since practically all its lands are cultivated and it will increase its acreage by less than 10 per cent.

Improved methods of cultivation is the watchword. The farm's experts are looking forward to boosting yields by greater application of fertilizer. And they lay stress on organic fertilizers preferring them to mineral plant food. "Mineral fertilizers are all right," one of the farm's experts said. "But they work like an injection. You pep up the soil, you get a bigger crop but that is as far as it goes. Organic fertilizers, however, change the very nature of your soil."

The farm personnel, as the manager pointed out to me has a double interest in higher yields. Firstly, workers are paid not only according to skill and quantity of work performed but there is also a system of remumeration for work producing better results. Secondly, when the farm gets higher yields it receives more produce from the government for distribution among its workers. Being a state owned enterprise the Ilyich farm naturally turns over all its output to the state, as do federal and state owned farms in the USA, such as the government grain, sugar, textiles, etc. The bigger the yield the more it gets. Last year, for example, in addition to their wages the individual workers received 1,200 pounds of grain, 16 yards of fabrics, etc. The workers receive three melsa a day and also vegetables and fruit. Each family has a small allotment garden, its own cow, hogs and poultry.

The farm employs a little over 200 regular workers, but during the height of the harvesting season it also resorts to seasonal help.

The farm maintains a kindergarten attendend by 48 children of pre-school age, a nursery which caters to 15 infants, and a medical station.



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GULF BRANDS

GROWERS AND SHIPPERS STUDY CITRUS PROBLEMS

(Continued from page 5)

which it is hoped will result in the shipment of much better appearing and better tasting oranges.

Appointment Opposed

Hiring of Julian Langner for the export survey job came despite the vigorous opposition of Murl Pace, secretary-manager of the United Growers and Shippers association, Orlando, who said he feared the salary involved would "create personnel problems," and also subject the commission to "tremendous and justified criticism."

The commission, he said, has men already in its employ capable of doing the job for which Langner is being hired.

Marvin Walker, secretary-manager of the Florida Citrus Producers Trade association, supported Langner's appointment.

The bare quorum of six commission members out of an 11-man board voted unanimously to hire Langner despite Pace's objections.

The Langner item was contained in a report by the advertising committee presented by W. L. Story Winter Garden, chairman. Story recommended Langner's appointment for a trial period of six months.

Langner was described as a "thoroughly competent, resourceful individual" by Walker, who said the man had been employed by the British information service at San Francisco during the war, but had lived in Florida many years before that and was instrumental in formation of a large turnentine association at Jacksonville and other projects.

British Market Seen

His associations with the British will make him particularly useful in negotiations with that country, Walker said, adding that the British are resuming the purchase of concentrated orange juice after using up reserves obtained during the war.

A recent purchase of 300,000 gallons of concentrate from California was mentioned with Walker charging that "Florida certainly missed the boat on that deal" by not having someone close to the situation who could have kept Florida concentrate manufacturers advised.

Pace's suggestion that Langner's appointment be delayed for a time also was shelved.

The new combination grade for oranges permits only 50 per cent of the fruit to grade No. 2, compared with 60 per cent before. It also limits discoloration on the No. 2 fruit to 50 per cent of the surface, as against two-thirds.

The commission adopted a recommendation made by a special committee named to "clean up" the grade, headed by John B. Rust, Winter Haven. Washington has indicated it will change federal specifications to comply with the new requirements. The grade affects Texas oranges, also, but that state has said it would "go along" on the proposal.

EFFICIENT USE OF DDT IN INSECT CONTROL

(Continued from page 3)

fruits, and forage crops is the possibility of residues on the plants at harvest time. One of the outstanding characteristics of DDT is its residual or lasting effect. It disintegrates very slowly and it is not easily washed off by dew or rain. As DDT is somewhat toxic to humans and warm blooded animals when taken internally, one must be sure that the produce sent to market or fed to livestock is practically free of the insecticide. It is not advisable to use it on cabbage or lettuce after the heads begin to form, or on beans, tomatoes, peppers, squash, and similar crops after the fruits begin to set. If insects become so numerous near harvest time that control measures must be used, the grower can resort to such non-poisonous insecticides as rotenone orpyrethrum.

DDT dusts for household use and for controlling livestock pests contain from 5 to 10 percent DDT. Dusts of this type may be used in nests and beds of animals to control fleas, lice, and other pests. They also may be used under houses and other buildings to clean up infestations of fleas which often occur in such situations. Indoors they may be dusted under sinks, in closets or other enclosed places where insects are found. The most important consideration in the use of this, and all other types of DDT in the home, is to avoid contamination of foods, cooking utensils, and dishes.

Water dispersible DDT can be used in many ways. It is the most desirable form for spraying cattle and other livestock and for use in barns, stables, and animal pens. A spray containing from 1 to 2 percent DDT is suitable for controlling horn flies, lice, and other animal parasites; for use in buildings a 2 or 2½ percent spray is better. The spray leaves a noticeable white residue on treated surfaces and is not advised for household use.

Water dispersible sprays can also be used on plants. They are usually made to contain about 1 pound of actual DDT in 199 gallons of water, or 1 ounce in 6 gallons.

DDT emulsions in water are used in much the same way as the water dispersible form and at about the same concentrations. This type is particularly suited for use on door and window screens and screened porches, for controlling flies and mosquitoes.

DDT dissolved in deodorized kerosene or other light oils is primarily a household spray. This form can be used on practically any surface without leaving a noticeable residue. In using this

(Continued on page 22)

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EFFICIENT USE OF DDT IN INSECT CONTROL

(Continued from page 20)

and other types of DDT in the home, the importance of a thorough and careful application cannot be over-emphasized. The insects are killed by coming in contact with the DDT residue on the surface and if it is not present in sufficient qauntity the insects will not be killed. An inadequate, haphazard application can only result in failure and disappointment.

DDT in oils can be absorbed through the skin and repeated or prolonged contact with sprays of this type should be avoided. They must never be used on livestock or pets. It is unsafe to use DDT in any form on cats because of their licking habits. Many of the common household sprays now contain DDT in amounts varying from a fraction of a percent to 5 percent or more. No special precautions are needed in using the low concentration sprays, but those with higher DDT contents should be regarded like any other oil spray containing like amounts of DDT.

Aerosols probably have fascinated people more than any other recent insecticide development. Essentially, these consist of an insecticide mixed with a liquefied gas in a metal bomb-like container. These are sometimes popularly referred to as "Bug bombs". When a valve is opened, the gas escapes, and carries with it some of the insecticide in finely divided particles which float in the air for a long time. Aerosols are strictly a space insecticide designed to give a quick kill of flies, mosquitoes, and other flying insects in houses and other buildings. They are of little value against such crawling incests as roaches and bed bugs as they leave no effective DDT residue on walls and other surfaces, even with prolonged and repeated application.

So, it may be said that DDT is without doubt one of the outstanding developments in the whole history of insect control. It is effective against a greater variety of insect pests than any other insecticide; and it controls some pests which could hitherto be controlled with difficulty or not at all. It is by no means a "cure all". If used in the proper form and in a suitable manner for the particular task at hand, it is perfectly safe and can be depended upon for satisfactory results.

READJUSTMENTS IN PROCESSING AND MARKETING CITRUS FRUITS

(Continued from page 7)

ethylene in air are desirable during the degreening process. Many packing houses are now using one part gas to 10,000 parts air applied continuously by means of the trickler-system during the "sweating" period. Fruit to which dye has been added to give deeper color, must be sttamped "color added" to guard against deception. Florida fruit-maturity laws specify that fruit to be colored in this manner must meet more stringent requirements than fruit not colored. Practically all recent methods devised for applying dye and the most suitable dye to use are covered by patents.

Since about 1935-36 there has been a trend away from the use of nailed boxes to the use of the wire-bound bruce box both in Florida and in Texas, because it is more economical and more handy to use. Its cost is less than that of the nailed box, and cost of packing is less. When the fruit is placed in the bruce box, it is not wrapped nor does the packing need to be done as carefully as in nailed boxes. A saving also is effected in lidding and in cost of assembling boxes. Nailed boxes must be assembled at the packing house whereas wire-bound boxes can be made in a factory and shipped knocked-down to users. Nailed boxes probably will continue to be used exclusively by packing houses that want to put out a fancy package of fruit and that prefer to sell at auction, since wire-bound boxes, except during the war, have been heavily discounted at the auctions.

Before the war mesh bags were used by some Florida and Texas shippers, largely for shipments by truck. During the war mesh bags have been shipped to eastern and midwestern markets by rail; cars have been loaded with both boxes and bags except when the fruit was firm enough to permit loading straight cars.

Oranges packed in consumer-size mesh bags were in good demand during the 1943 and 1944 seasons. Large chain stores in particular bought them in order to save paper bags and to reduce handling in their retail stores.

Savings in packing will be realized with the development and utilization of mechanical methods of filling and sewing bags. As volume increases, savings in the cost of containers and packing will become more apparent. Selling in mesh bags may also mean larger unit purchases by consumers and lower distribution costs at retail. The resumed importance of truck shipments within the next few years may stimulate the packing of citrus fruit in mesh bags. Since increases in production will force the utilization of every available means to increase citrus consumption and promote low-cost distribution, mesh bags may be used more and more in spite of resistance from some shippers. It is also likely that some other types of consumer packages will be developed. For example, a cardboard carton with a window might be used. This type would permit the use of brands and would mean less damage to the fruit than when mesh bags are used.

While these container developments have been taking place in Florida and Texas the shippers in California have continued to use the 1 2-5 bushel nailed box for oranges and grapefruit and the standard lemon box for lemons. The distance involved in moving California citrus to both eastern and midwestern markets is so great that it has not been considered practicable to use any other type of container. Moreover, California shippers in general have based their merchandising program on quality pack.

Some packers in Florida are opposed to wrapping fruit because of the labor and expense, and they question the benefit of the wraps because of spoilage when the cool fruit is brought into moist air and the wrapper becomes wet. In Florida about 10 percent of the crop is now being wrapped, which figure may be compared with an estimated 70 percent in California. In the

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postwar period it is probable that shippers in California will resume the wrapping of higher quality fruit, but Florida and Texas shippers probably will not return to wrapping so extensively.

Recently several new-type wraps have been tried experimentally and may prove to be practicable. Research on citrus wraps has been aimed mainly at developing a wrap that would aid in controlling blue mold and stem end rot and in preserving the original condition of the fruit over a longer period. Tests on wrapping materials for citrus have included pliofilm, the regular paper wrap treated with diphenyl, and certain foils. It is possible that better treated wraps and foils than now in use will be developed and may find general acceptance for fruit directed to certain markets during the next few years.

Portable precoolers have been developed which permit cooling in the loaded car rather than in separate rooms. It also has been found desirable to shorten the length of time the boxed fruit remains in the precooler before it is shipped.

Marketing Channels and Recent Changes in Fresh Marketing Practices

Certain differences in marketing channels between California and Florida are of importance when possible economies in the marketing of packed fruit and in processing are analyzed. Practically all of the California crop is moved through packing houses, whereas in Florida certain quanities are marketed directly from the tree through itinerant buyers and thence largely to the processor, or directly through processing plants; the cooperatives in California market almost 80 percent of the orange crop, whereas in Florida the cooperatives market only about 35 percent. The percentage of the Florida crop that is processed is more than twice the percentage processed in California. On-tree sales account for only about 1 percent of total marketings in California, whereas they account for almost 50 percent of the total marketings in Florida.

In all areas certain changes came about in the marketing channel during the war; some of these may be permanent and, if so, may tend to reduce marketing costs. There has been a considerable increase in f.o.b. sales and considerably less use of the auction. The percentage of Florida oranges sold through the auction from interstate shipments made by rail, boat, and truck shows a decline from 40.9 percent in 1930-31 to 34 percent in 1940-41 and 20.1 percent in 1943-44. Records of California shipments show a similar decline in the percentage of auction sales, though a larger percentage than from Florida is still sold through that agency. Major exceptions are the Florida Indian River fruit and the fruit that comes from the California Fruit Growers Exchange, practically all of which moves through auctions in cities where terminal auctions exist.

Briefly, the reason the auction was used less during the war was that a sellers' market existed and sale through the auction was thought unnecessary to assure competitive bidding among a large number of buyers. It is possible that during the next few years contracts between buyers in the terminal markets and sellers in the producing areas may perpetuate a certain amount of the present direct selling (as contrasted with auction selling). But in general the auctions are expected to regain their former volume.

Merchants from small towns in terminal market trade area during the war came together to buy pooled cars of citrus, instead of buying from jobbers or wholesale merchants in the terminal market. Pool buying may continue in the postwar period if cooperative buying relationships continue to be acceptable.

Another change in the marketing channel has been the growth of the "buying broker" in the terminal market because of shortages of the tires, gasoline, labor, etc., available to the retailer and jobber. The buying broker buys a carload of oranges through the terminal auction, then splits the car and usually arranges with a commercial trucker for delivery to retail stores, or sometimes to jobbers. It was esti-

(Continued on next page)

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NOTES OF THE TRADE

STUART BROTHERS BUY FLORIDA FAVORITE CO.

Stuart Brothers of Bartow, with W. H. Stuart as president and J. K. Stuart as vice-president, have acquired ownership of the Florida Favorite Fertilizer Company of Lakeland.

The Stuarts are well known citrus growers, cattle raisers and owners of vast acreage of real estate in Polk county and have been prominently associated with the business and other interests of the county from earliest manhood.

The Florida Favorite Fertilizer Company, located on the old Tampa road west of Lakeland, has been supplying many growers with their fertilizer needs for a number of years.

The transfer of ownership took place during the past month and operations will be continued by the Stuarts from the present site.

NEW INSECTICIDE PRODUCED TO COMBAT CROP PESTS

Initial production of a new insecticide containing hexachlorocyclohexane, a chemical which has been tested with success against a number of important crop pests both in the United States and abroad, was announced recently by the Du Pont Company.

This new agricultural chemical weapon is being made available as "Lexone" insecticide for large-scale experimental work and for use on selected crops during the coming season to establish its exact place in the field of agricultural chemicals.

The new insecticide contains 50 per cent hexachlorocycolohexane in a wettable powder formulation suitable for application in a water spray and for further dilution for dust application.

"In research thus far, this new insecticide has shown promise for control of cattle lice, many insects of cotton, including aphids, and for certain insects that have heretofore been difficult or impossible to control," the statement, issued by the company's Grasselli Chemicals Department, says. It adds:

"Considerable promise has been shown by this chemical in control of locusts or grasshoppers, and large-scale usage for that purpose has been reported from Africa and other Mediterranean countries. As a contact insecticide, it may have limited residual properties. It also has insecticidal action as a fumigant for certain uses."

According to the Florida Experiment Station, there are 40 different plants suitable for ground covers in Florida gardens and lawns. Some are creeping, some erect.

READJUSTMENTS IN PROCESSING AND MARKETING CITRUS FRUITS

(Continued from preceding page)

mated in 1944 that about 50 percent of the oranges sold through the terminal auction were bought by buying brokers. If the service proves economical to the retail merchants, the buying brokers may continue in the marketing of oranges during the next few years. A considerable decline in the operation of hucksters in the terminal markets was evident during the war hutcksters will probably return to the market after the readjustment period.

A greater percentage of the total oranges marketed is now going to the canneries. Canning interests during the later war years were actively competing in the open market for a share of the orange crop.

Alterations in marketing practices which came about during the war include: An increase in pound selling of oranges as well as grapefruit, along with incerases in percentages of fruit pulled rather than clipped, centralization of packing activities, reduction of percentages wrapped, growth of the popularity of the 8-pound mesh bag, and increased experimentation in other types of prepacking. The advantage claimed for pound selling is that consumers act with more indifference toward the size of the oranges when purchase is made by the pound than when by the dozen and focus attention upon juice content and other qualities. Pound selling is related to packing and shipping in bags and elimination of wrapping—tendencies which are expected to increase during the next few years.

(Continued in next issue)

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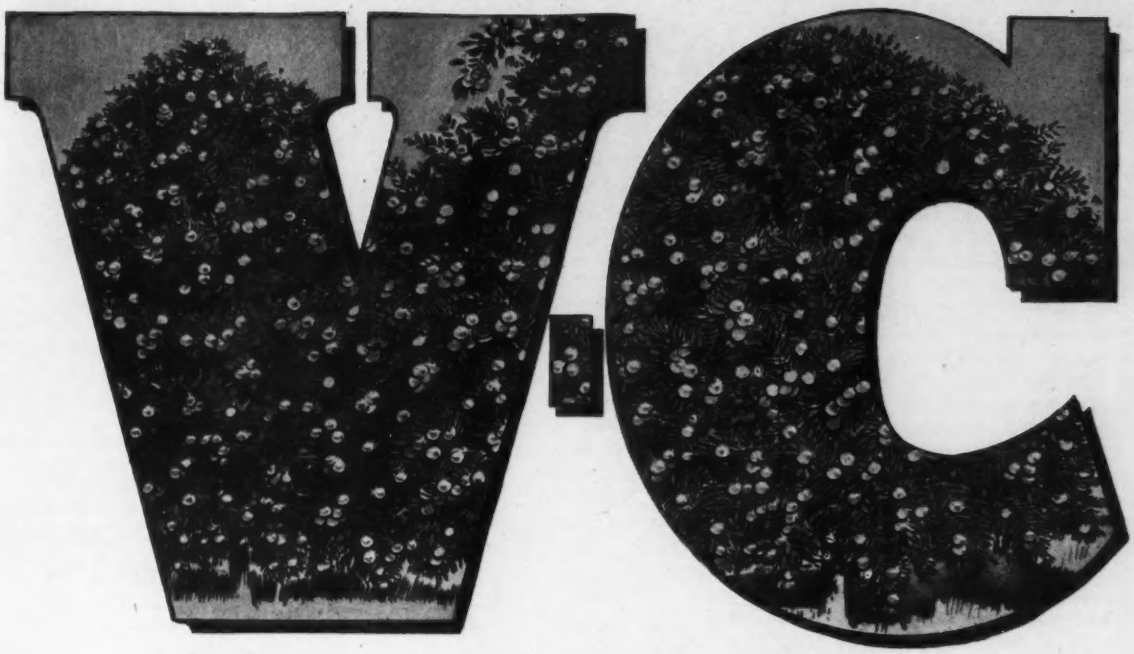

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Your V-C Representative can supply you with V-C Fertilizers balanced to meet the particular plantfood needs of your citrus, truck, or field crops. But what you really get when you buy V-C Fertilizers is not just a mixture of fertilizer materials in a bag. What you are really buying is bigger yields of better quality crops from your own farm and grove at extremely low cost for the extra crops produced.

When you buy V-C Citrus Fertilizer, you are really buying growth, health and vitality for your trees and bigger yields of fruit that has the size, shape, quality, color, weight and appearance the market prefers. Under the thin, tough peel of this fruit, there is finer texture, better flavor and richer juice.

When you buy V-C Truck Fertilizers, you are really investing in greater yields of the No. 1 vegetables that bring top prices. These vegetables are well-formed, fine-textured and take on a good finish. They stand up under shipping and reach the market fresh and crisp.

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Commander Suggests Plan To Bolster Citrus Market

C. C. Commander, general manager of the Florida citrus exchange and a member of the Florida citrus commission, said recently Florida could market 50,000,000 boxes of its crop every year in the beverage field alone "if a suitable method were developed to compete with colas in cold drink boxes.

"It's a research problem that should be tackled by the industry as a whole."

Commander, who has sought vigorously as a member of the commission to have the beverage field exploited, outlined a long-range plan to bolster the sagging citrus industry. In addition to the beverage suggestion, he also proposed erection of an export pool to boost overseas shipments and urged higher internal quality requirements.

Commander said the Exchange has received a new fruit juice dispenser of radical design which will be offered the industry if it successfully passes tests now being made. He pointed out that several juice dispensers and automatic extractors already under consideration have been improved recently and may be put into operation this season.

Another way to avoid a future citrus surplus, he said, is to develop extensive overseas markets.

"The industry should set up an export pool to handle all overseas shipments from Florida," he said. "Although the Florida citrus commission has wisely hired an export consultant, these foreign markets are virtually untouched by fruit from this state. By having a pool we could avoid competing against one another and also the danger of creating a surplus at any single market that would undermine the entire price structure."

The commission last week placed Julian Langner on its payroll at $1,500 a month and expenses to make a complete study of export possibilities and recommend how this business can be expanded. He was hired for a six-month trial period.

Commander said he strongly endorsed efforts made recently to raise the internal quality of fruit, especially fruit shipped early in the season in competition with California's late Valencia crop.

"I would even be in favor of a state tax on citrus to cover the cost of destroying all trees which will not produce good quality fruit," he said. "Regardless of how we juggle grades and standards, we still must destroy the poor fruit if we expect to uphold buyer confidence. Therefore, I see no reason to produce poor quality fruit."

W. L. Story, Winter Garden, chairman of the commission's advertising committee, suggested the "tax for destruction" plan at a recent mass meeting of the industry, but no action was taken on the proposal.

Want Sugar Controls Continued

Farmers and orchardists in the United States will sell more of their products in 1947 to both household and industrial consumers if recommendations made by the Sugar Committee of the Food Industry Council to the administration in a report on the world situation and U. S. supplies and requirements, are adopted.

Continuance of sugar controls and rationing in the U. S. beyond the present expiration date of March 31, 1947; gradual transition from control to decontrol; and refusal to make firm foreign commitments on allocations of 1947 supplies at this time, are among recommendations made.

Household users would get ten pounds more sugar than the 25 pounds of 1946 and industrial users would receive about 27 percent more sugar than in 1946 with proper planning from present indicated increase in 1947 world sugar supplies.

Canning of fresh fruits and vegetables, and the making of jams, jellies, and preserves in homes as well as in food processing plants have been hindered by sugar shortages.

The analysis, which was published after months of study, was undertaken to tell the American public how long the present world sugar shortage may be expected to last, and how it could be best ended at the earliest possible date.

"Sugar is a matter of great importance to every household user, and to almost every food processor," the report emphasizes in its nine conclusions and in some of its thirteen statistical tables.

"Shortages not only affect the household user at every meal, but hinder the canning of fresh fruits, vegetables, jams and jellies, which in turn hurt producers of fruits and vegetables. Large quantities of fruits have been lost because of sugar shortages. For food industries generally, a freer supply of of sugar is of vital importance."

"World supplies in 1947" according to another conclusion, "probably will increase sufficiently so that U. S. individual householders could be raised from 25 pounds annually to 35 pounds annually (an increase of 40 percent for the year) and the industrial user level could be raised 27 percent for the year)."

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